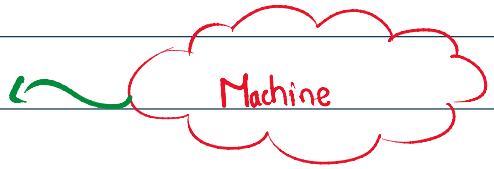
State Transition Diagram

Friday, August 27, 2021 10:12 AM

State Transition Diagram

Machines Have States



→ ON OFF

RedLight GreenLight

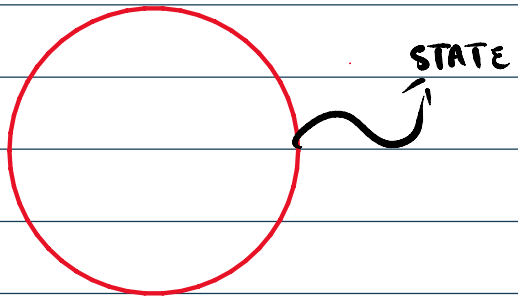
YellowLight

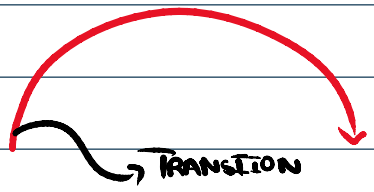
Any Machine That Has Fixed Number of States Are Known As Finite State Machine.

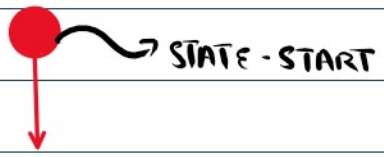
What is transition ?

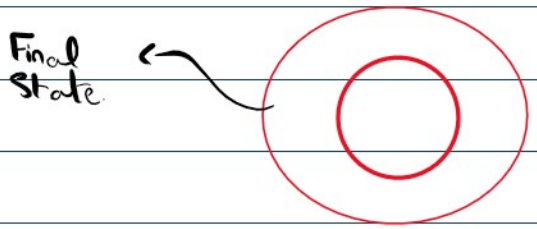
Moving From one state to another is known as transition.

Symbols Used In State-Transition-Diagram





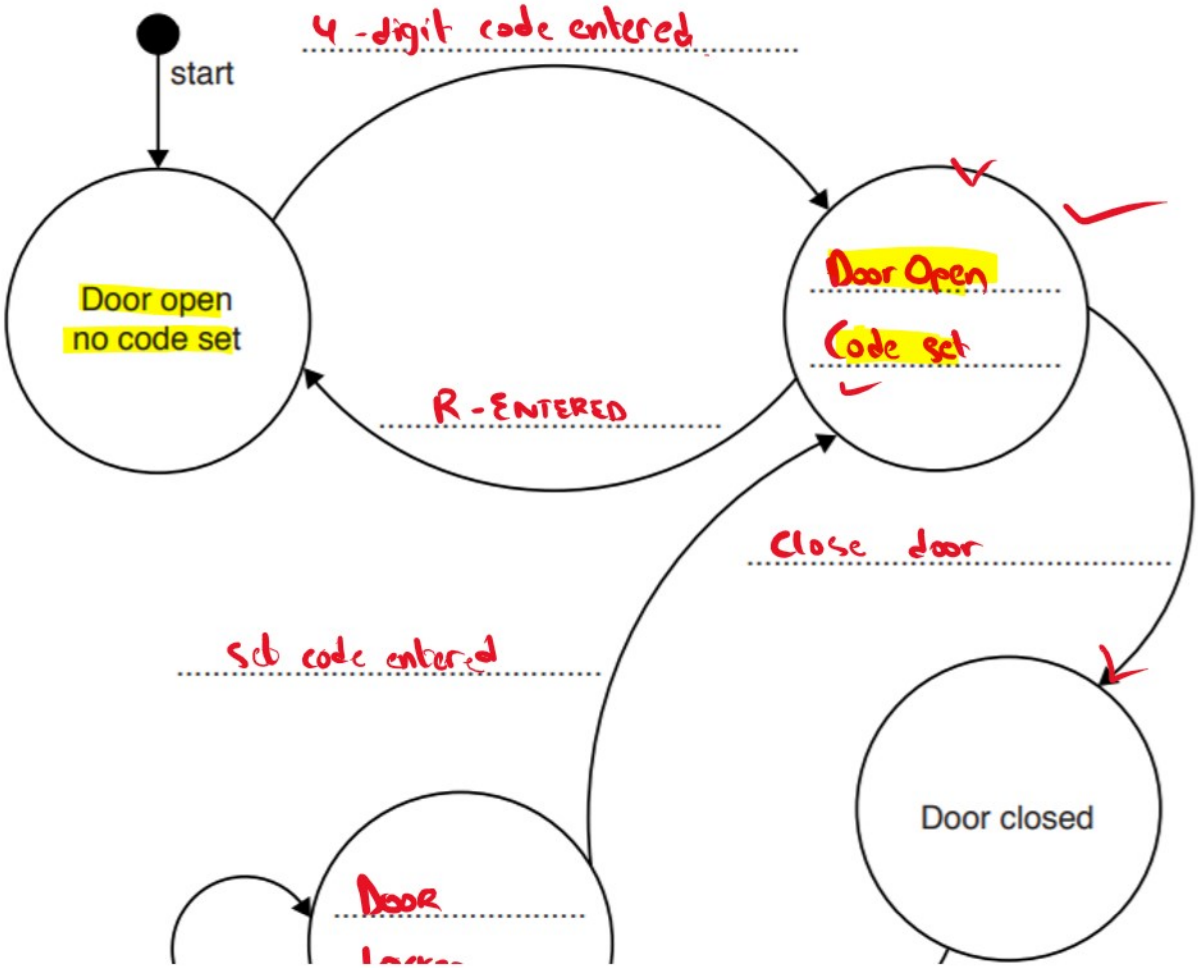


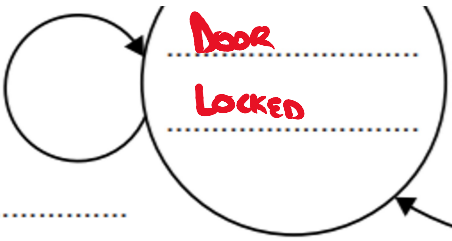


The following state transition table shows the transition from one state to another of the safety deposit box:

Current state	Event	Next state
Door open, no code set	4-digit code entered	Door open, code set
Door open, code set	R entered	Door open, no code set
Door open, code set	Close door	Door closed
Door closed	Set code entered	Door locked
Door locked	Set code entered	Door open, code set
Door locked	R entered	Door locked

(a) Complete the state-transition diagram.





Restored

Set code entered

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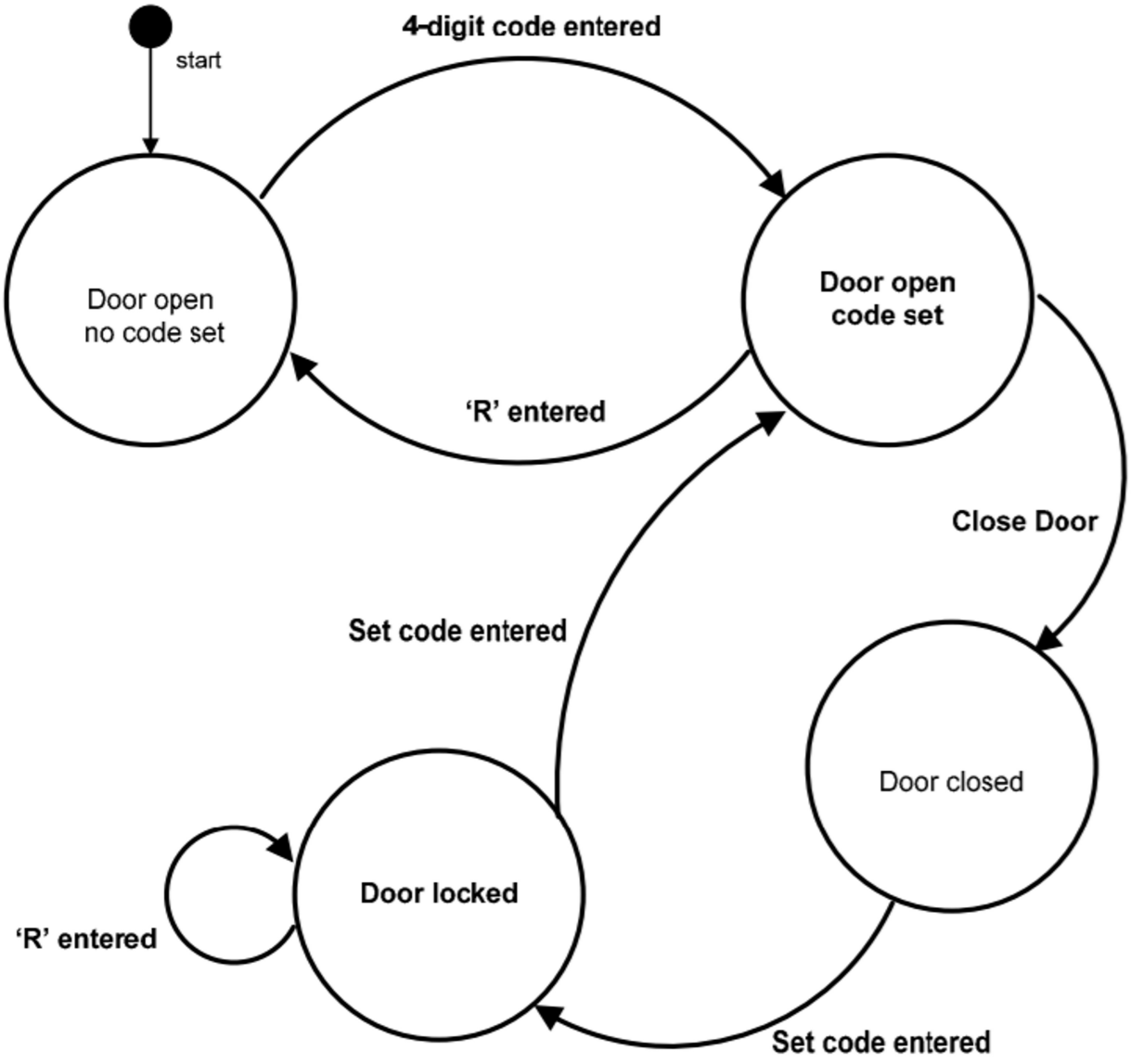
1 **(a)** 1 mark for both Set code entered correct. 1 mark for each label. **[7]**



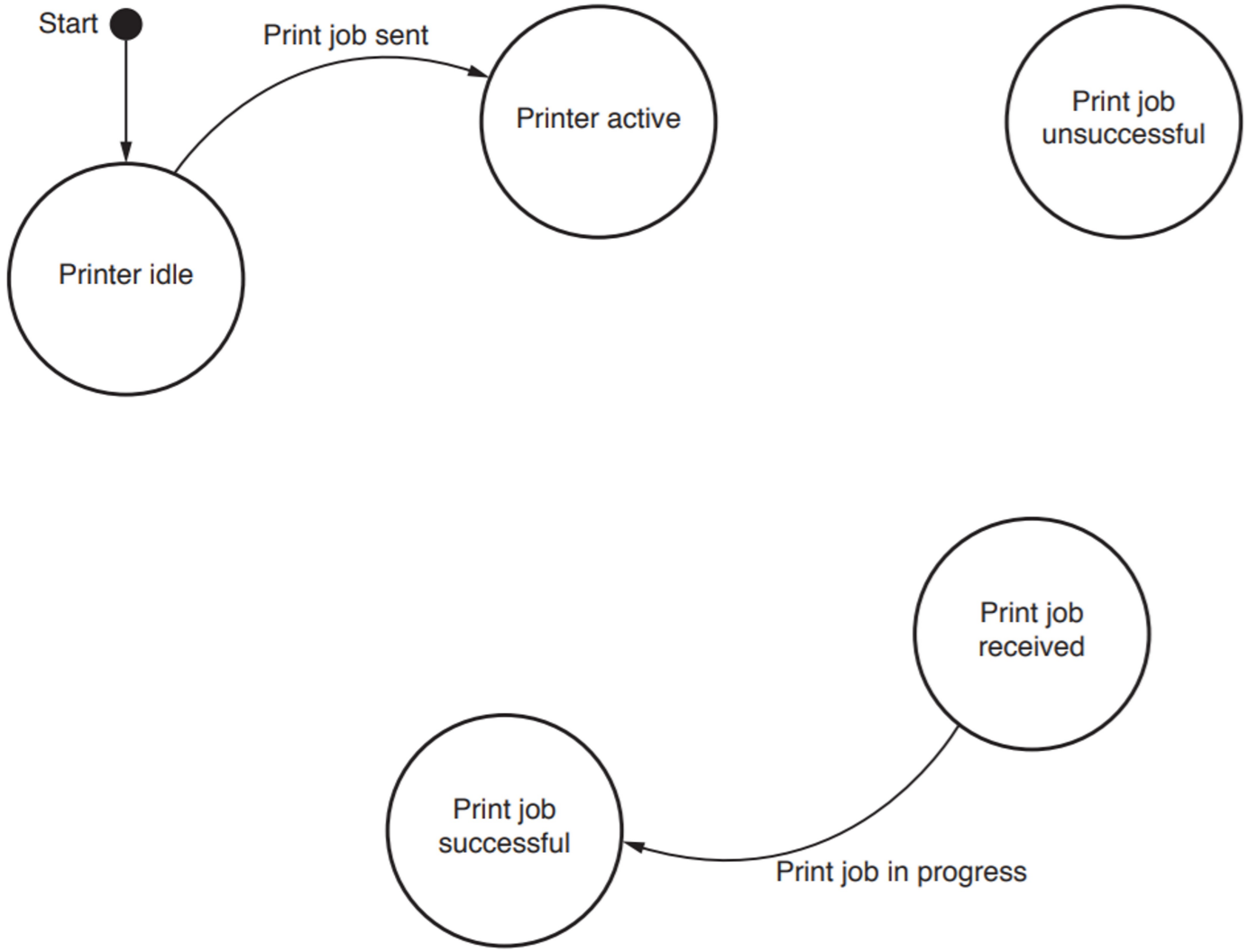
Question 2

(c) The university wants to analyse how a printer and a print server deal with the print jobs.

The following table shows the transitions from one state to another for the process.

Current state	Event	Next state
Printer idle	Print job sent	Printer active
Printer active	Print job added to queue	Print job received
Print job received	Print job in progress	Print job successful
Print job received	Print job in progress	Print job unsuccessful
Print job successful	Check print queue	Printer active
Print job unsuccessful	Error message displayed	Printer active
Printer active	Timeout	Printer idle

Complete the state-transition diagram for the table.



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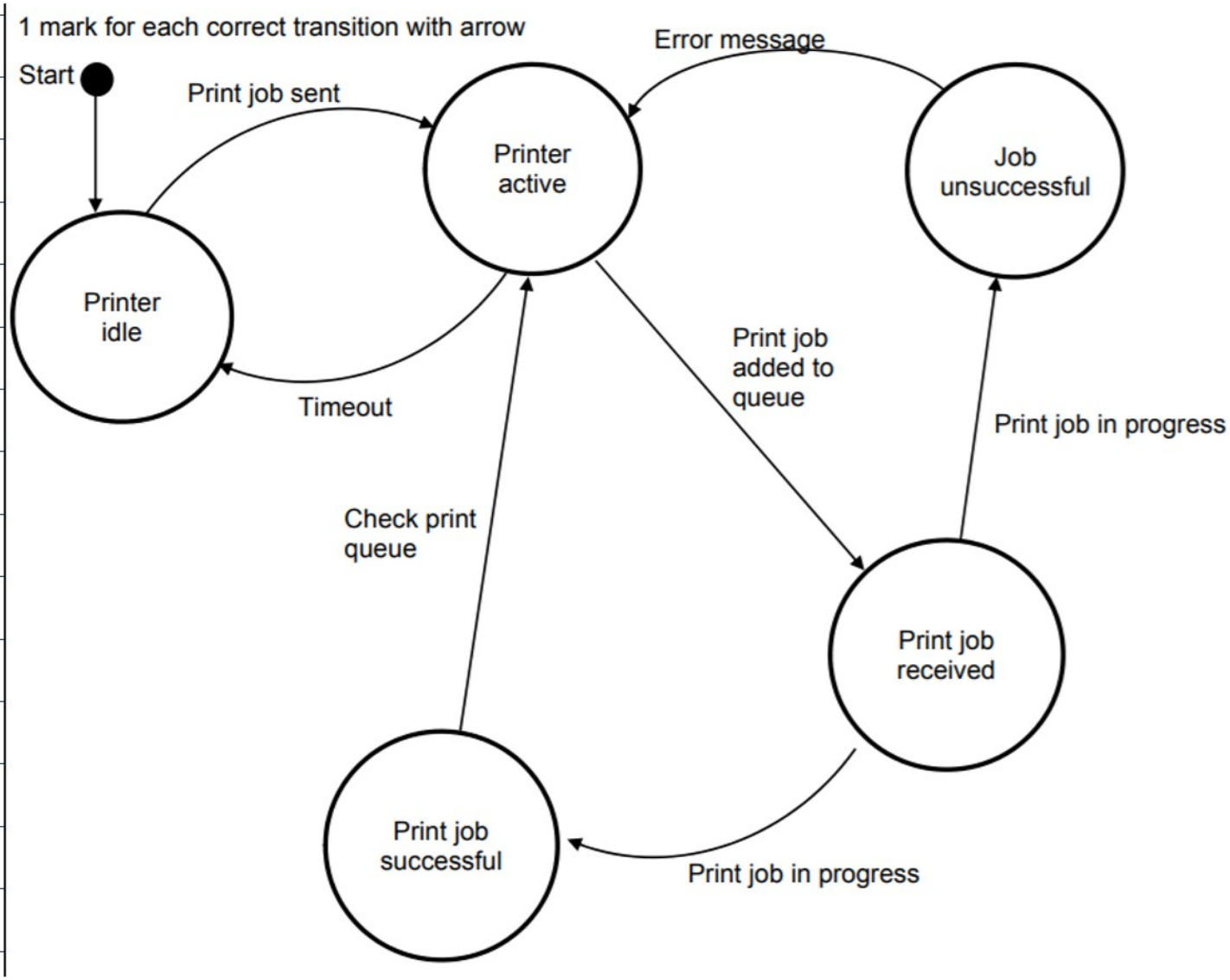
1 mark for each correct transition with arrow

1 mark for each correct transition with arrow



QUESTION 3

The petrol pump's four possible states and the transition from one state to another are as shown in the table below.

Current state	Event	Next state
Pump ready	Take nozzle	Pump in use
Pump in use	Press trigger	Pump dispensing
Pump dispensing	Stop pressing trigger	Pump in use
Pump in use	Replace nozzle	Pump out of use
Pump out of use	Reset pump display	Pump ready

Complete the state transition diagram for the petrol pump:

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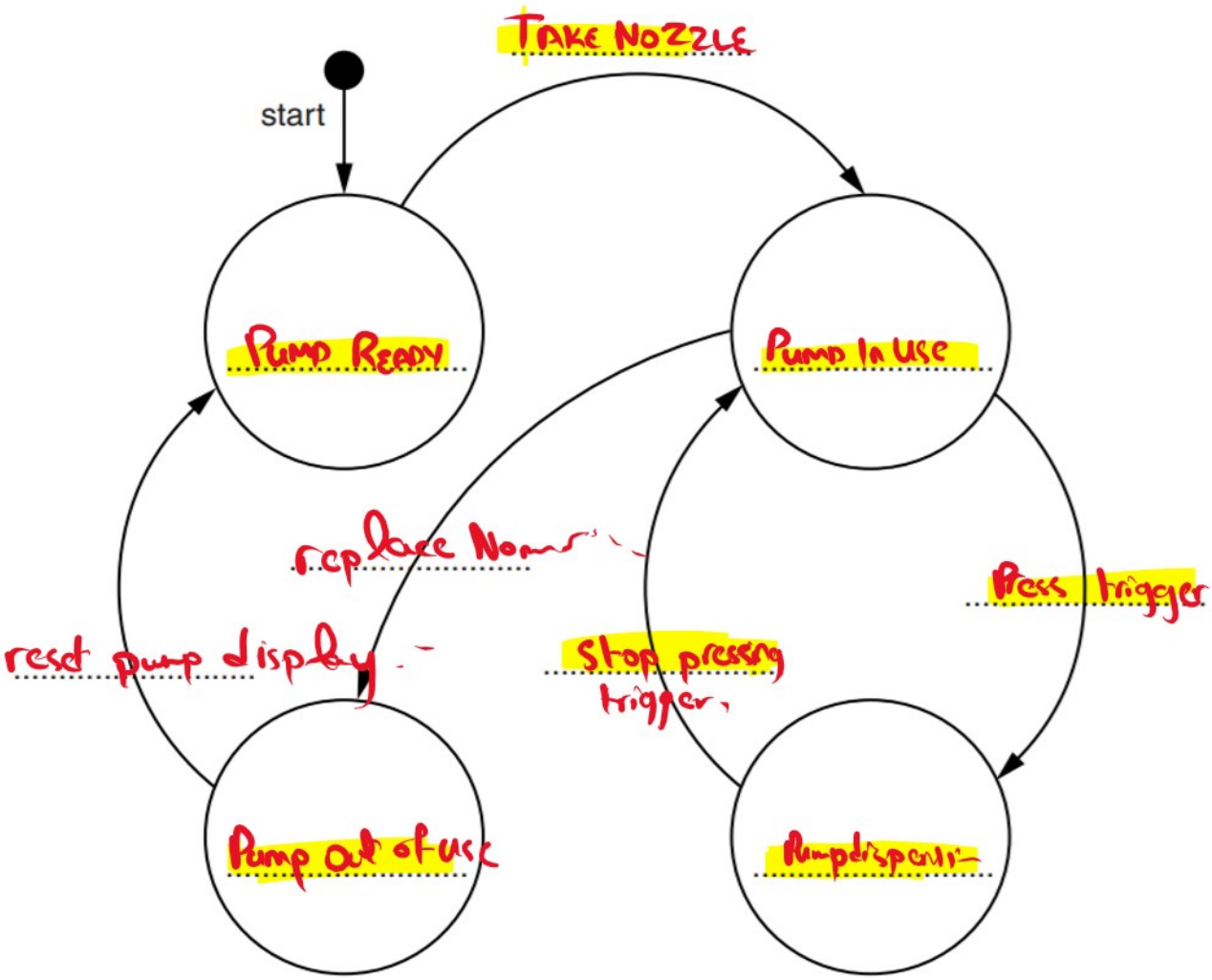

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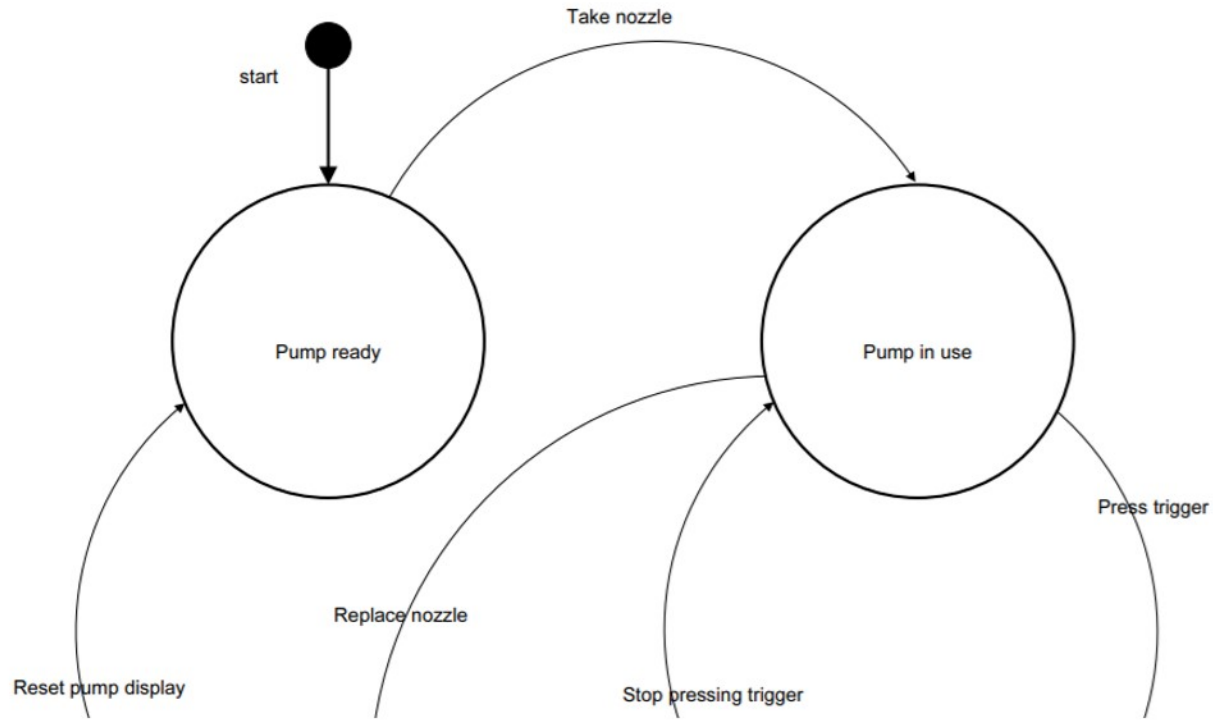

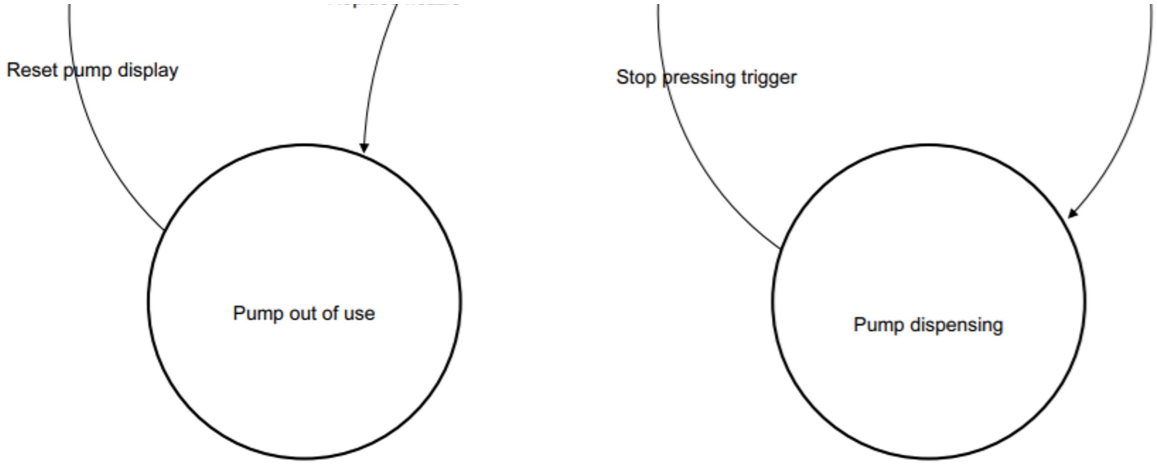

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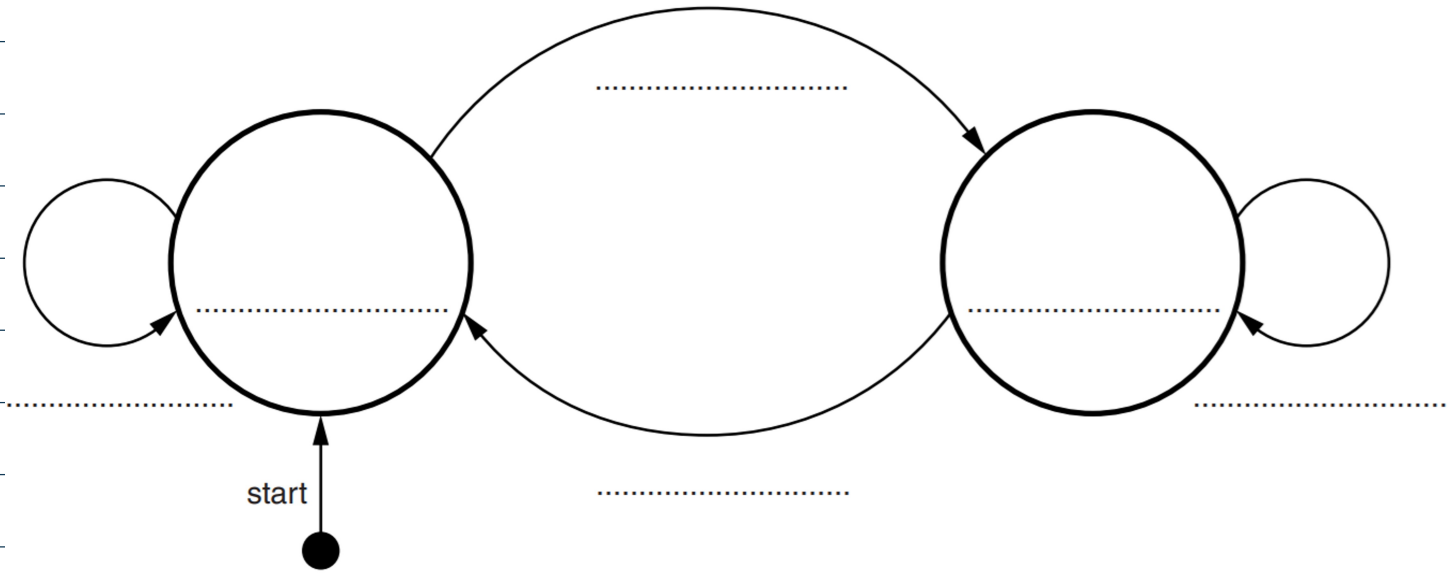
Question 4 :

The turnstile has two possible states: **locked** and **unlocked**. The transition from one state to another is as shown in the table below.

Current state	Event	Next state
Locked	Insert coin	Unlocked
Locked	Push	Locked
Unlocked	Attempt to insert coin	Unlocked
Unlocked	Pass through	Locked

Complete the state transition diagram for the turnstile:



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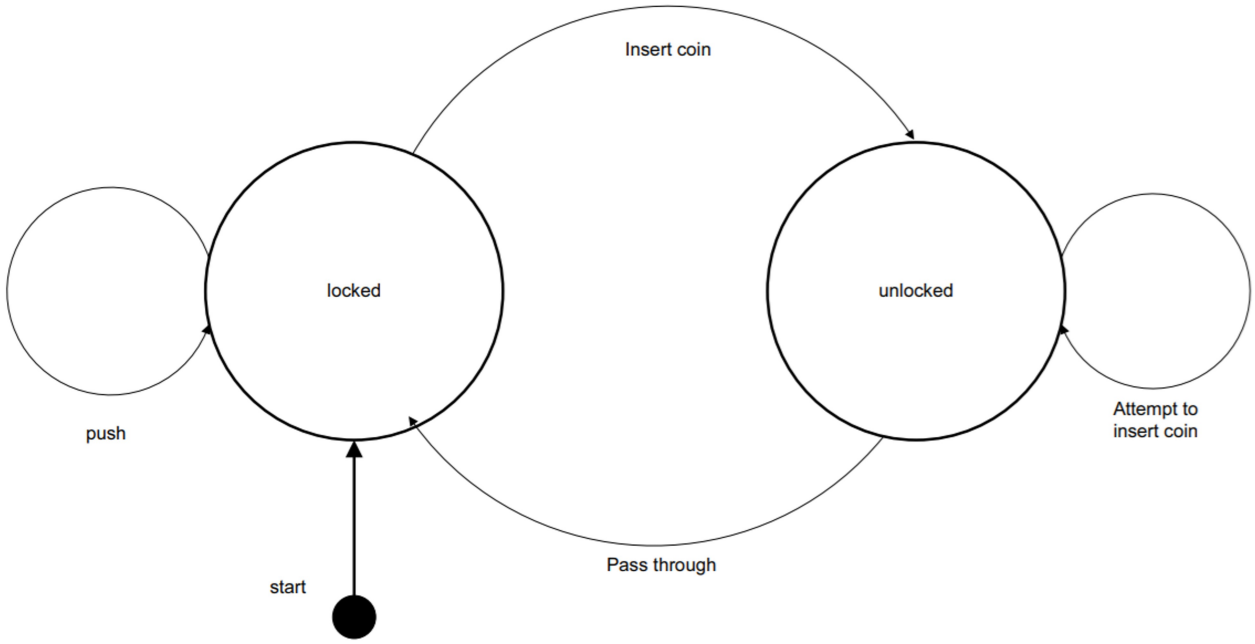
Insert coin
locked
unlocked
push
Attempt to
insert coin
start
Pass through